UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

MEMORANDUM

DATE: JUL 11 1994

SUBJECT: **ACTION MEMORANDUM** - Determination of Threat to Public Health or the Environment at the Lindsay Light II Site Chicago, Cook County, Illinois (Site Spill ID #ZA)

FROM: Verneta J. Simon, On-Scene Coordinator
Emergency and Enforcement Response Branch - Section III

TO: William E. Muno, Director
Waste Management Division

THRU: Jodi L. Traub, Acting Associate Division Director
Office of Superfund

I. PURPOSE

The purpose of this Memorandum is to document the determination of an imminent and substantial threat to public health and the environment posed by the existence of elevated gamma levels as high as 280 microRoentgen per hour (uR/hr) at the Lindsay Light II Site, a public parking lot located at 316 East Illinois Street in Chicago, Illinois.

Potentially Responsible Party (PRP) lead response actions are being taken pursuant to an Administrative Order by Consent (AOC) (please see confidential enforcement addendum). These response actions essentially require an extent of contamination study which will help determine the scope of future response actions. Currently, the parking lot is covered with asphalt and/or concrete and persons parking at this lot are not expected to be exposed long enough to be adversely affected by the gamma rays emitted. The gamma ray exposure received by parking lot attendants and any long-term area transients may pose an imminent and substantial threat to public health.

This site is not on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID # ILD 0000002212

A. Physical Location

The Lindsay Light II Site, a public parking lot, is located at 316 East Illinois Street, Chicago, Cook County, Illinois. This 3-acre Site is bounded by Grand Avenue, Illinois Street, McClurg Court and Columbus Drive and is situated in a urban area called the Gold Coast. This property is surrounded by commercial and residential buildings with a shopping mall located approximately 200 feet to the south east. The Chicago River is located 1 mile south of the Site and Lake Michigan is about 1.5 miles east of the Site. This Site has the usual metal barricades for a parking lot; however, it does not totally restrict access. It is possible to step over the barricades if you want to gain entry to the parking lot or use it as a short-cut.

B. Site description and background

The Lindsay Light II Site was once occupied by the Lindsay Light Chemical Company, which made incandescent gas mantles for home and street lighting. Earlier reports show this company first imported and then manufactured mantles. These activities occurred from at least 1910 until 1936 at 161 East Grand, which is .25 miles from the Site. It is unclear what Lindsay Light actually did at 316 East Illinois, however, records from the Chicago Dock and Canal Trust indicate this site was a stable, and that Lindsay Light leased portions of the building from Chicago Dock and Canal Trust from 1915-1933. Sometime after 1933, Lindsay Light moved to West Chicago, Illinois and was later purchased by American Potash, who in turn, was purchased by Kerr-McGee Chemical Company.

Gas mantle manufacturing involves dipping gauze mantle bags into solutions containing thorium nitrate and small amounts of cerium, beryllium and magnesium nitrates. The principal ingredient in thorium nitrate is radioactive thorium, specifically, thorium-232. Thorium-232, which is the parent of the Thorium Decay Series, has a half-life of 14 billion years. It is believed that the principal source of contamination at this Site is the Thorium Decay Series.

C. Current site conditions

Conditions have not changed since the site assessment on June 3, 1993. This property is still operated as a public parking lot with attendants stationed as shown on Figure 1.

D. Other actions to date

From June 30, 1993 to July 30, 1993, two thermoluminescent dosimeter(TLD) badges were placed in the ticket booths shown in Figure 1. TLD results for these locations were as follows:

TLD #	
9035	0.00058 millirem per hour or about 1.2 millirem per year
9036	-0.00184 millirem per hour or -3.7 millirem per year (which means all values are effectively zero)

These results were compared to the Nuclear Regulatory Commission (NRC) regulations in the new Title 10, Part 20.1301, Code of Federal Regulations of 100 millirem per year and 2 millirem per hour for individual members of the general public. The above results did not exceed either of these relevant levels.

The City of Chicago, the Illinois Environmental Protection Agency, and the Illinois Department of Nuclear Safety are aware of site conditions and plans described in this Action Memorandum.

III. THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Lindsay Light II site may pose an imminent and substantial endangerment to public health or welfare or the environment, based upon factors set forth in the National Contingency Plan(NCP), 40 CFR 300.415 (b)(2). These factors include:

a) actual or potential exposure to nearby populations, animals, or the food chain from hazardous substances or pollutants or contaminants:

This factor is present at the site due to the existence of a public parking lot on property found to have gamma readings measured as high as 280 microRoentgen per hour (uR/hr) on a Ludlum Model 19 Micro-R meter. This reading is 14 times the background level, 20 uR/hr, measured for the site.

Gamma rays are penetrating radiation indistinguishable from X-rays which can be absorbed by tissue in the human body, thereby increasing the cancer risk for the person exposed. The excess risk to a transient spending 1 hour per day for a 250 day work year at this peak exposure spot is 5×10^{-5}. Transients were judged to be parking lot customers, people using the lot for a short cut or temporary workers. Such a risk is not justified by personal benefit to the transient nor by societal benefit.

The excess risk to a parking lot attendant spending an 8 hour shift for 250 days per work year at this spot is 3×10^{-4}. Again, such an exposure entails cancer risk that would have no personal or societal benefit. Direct measurements with survey instruments at the present parking lot attendant stations found background radiation levels and these were confirmed with longer

measurements using thermoluminescent dosimeters (TLDs). There is no guarantee these stations could not be moved to the peak point at some future time, thereby introducing the potential for exposure and risk to be actualized.

b) high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate:

The presence of elevated gamma exposure levels at the site validates subsurface deposits of radiological contaminants. The dominant concern is intrusion into these materials that will contaminant the intruder and their equipment and, further, lead to dispersal or spreading of the contaminants from its present locations. Such a scenario probably has arisen, and could again arise, with parking lot excavation where workers and their equipment are contaminated by radioactive soils, dry soil is dispersed in the wind and excavation spoils are moved offsite. The number of people exposed could be greatly increased and might include workers, their families if contaminants are carried home, workers who subsequently use contaminated machinery, residents near the parking lot who might be subject to wind dispersed soils and users of excavation spoils. Such spreading could occur within downtown Chicago where the parking lot is located and out for several miles depending upon where workers reside and where spoils are used. This is a plausible scenario since recent plans were to build a large hospital building on this site.

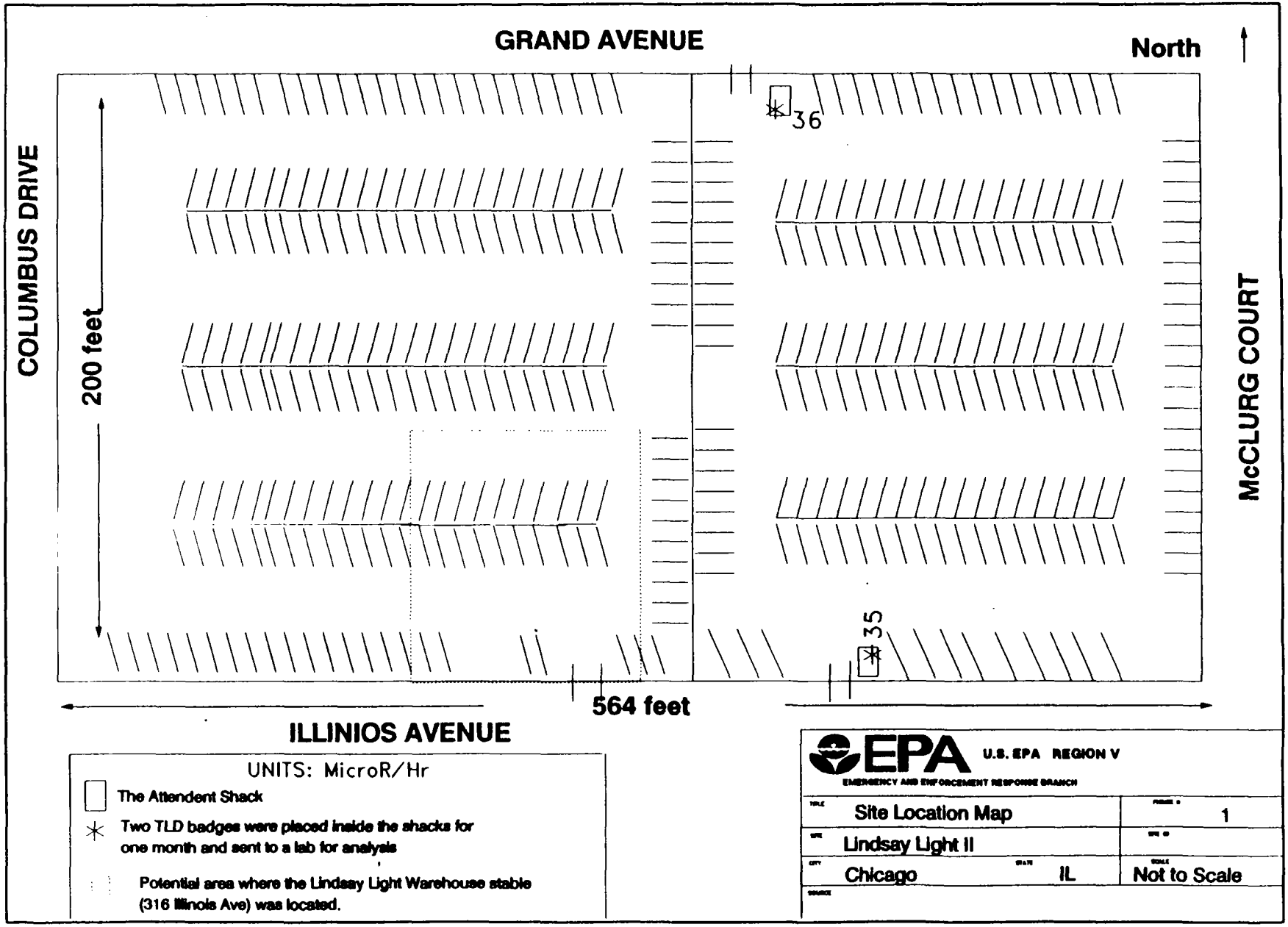
c) other situations or factors which may pose threats to public health or welfare or the environment

This factor is present at the Site due to the property's potential for future development. Such construction might entail excavating into potential contaminated soils for placement of building footings and cause increased releases into the environment and human exposure to contaminants. Also, it has not been determined whether subsurface contaminants are soluble. If they are there could be spreading via groundwater.

This site appears to be gridded with sewer lines. These could be conduits for the spread of both soluble and insoluble materials offsite, for extension of the region of contamination and for an increase in the potential for workers (sewer workers) to be exposed.

IV. ENDANGERMENT DETERMINATION

Given the nature of the Site, with unrestricted access to contaminants, the nature of these contaminants - gamma rays, which can not be stopped but attentuated; and an exposure pathway of direct contact, as described in Section II and III, the actual or threatened releases of hazardous substances from this Site, if


GRAND AVENUE
North
COLUMBUS DRIVE
McCLURG COURT
200 feet
36
35
564 feet
ILLINIOS AVENUE
UNITS: MicroR/Hr
The Attendent Shack
Two TLD badges were placed inside the shacks for one month and sent to a lab for analysis
Potential area where the Lindsay Light Warehouse stable (316 Illinois Ave) was located.
EPA
U.S. EPA REGION V
EMERGENCY AND ENFORCEMENT RESPONSE BRANCH
Site Location Map
1
Lindsay Light II
Chicago
IL
Not to Scale

not addressed by implementing the response action described in this Action Memorandum, may pose an imminent and substantial endangerment to public health, or welfare, or the environment due to the exposure to gamma rays, of parking lot attendants and/or site transients, which are above U.S. EPA's acceptable excess carcinogenic risk of $1x10^{-4}$.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

Pursuant to the AOC, the PRP intends to undertake the following actions to determine the extent of the contamination of the Site:

1) Develop and implement site health and safety plan.

2) Conduct land surveying to the extent necessary to locate all property boundaries and features, sample locations and areas having elevated radiation levels.

3) Place borings in several locations for the purpose of measuring subsurface radiation levels. Measurements shall be recorded until the natural soils are reached or radiation levels reach background, whichever is the greatest depth.

4) Collect soil samples from the borings and analyze for radionuclide content and RCRA characteristics. These results will then be used by the PRP to correlate subsurface radiation levels and radionuclide content.

5) Transport and dispose of all characterized or identified hazardous substances, pollutants, wastes or contaminants at a RCRA/CERCLA approved disposal facility in accordance with the U.S. EPA off-site rule.

The OSC has begun planning for the provision of post-removal site control, consistent with the provisions of Section 300.415(k) of the NCP. However, the nature of future response actions should eliminate all exposure threats, which should minimize the need for post-removal site control.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants or contaminants at the facility which may pose an imminent and substantial endangerment to public health and safety, and to the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

Applicable or Relevant and Appropriate Requirements(ARARS)

All applicable or relevant and appropriate requirements(ARARS) of

Federal law will be complied with to the extent practicable. A letter was sent to the Illinois Department of Nuclear Safety on June 21, 1993, requesting clarification on the waste designation any radiological material would be called. Their response was to classify waste from this site as "source" material and is contained in Attachment 1. Conversations held with representatives of the Illinois Environmental Protection Agency were that it was not necessary to send an ARARs letter to them since radiological matters are handled by the Illinois Department of Nuclear Safety, however, if it appears that any other issues occur during this action which are non-radiological an ARARs letter will be sent.

In accordance with the revised NCP, Section 300.825(a)(1), the response from the State to the request for ARARs will be added to the administrative record for this site once the response has been received and evaluated.

VI. CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED

Delayed or non-action may result in increased likelihood of direct contact threat to human populations accessing and working on the Site. Also, since there is no threshold for cancer, the continual exposure to gamma rays will increase the cancer risk.

VII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

For administrative purposes, information concerning confidential enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

X. RECOMMENDATION

This decision document represents the selected removal action for the Lindsay Light II site, in Chicago, Illinois, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for this site. Conditions at the site meet the NCP Section 300.415(b)(2) criteria for a removal action.

APPROVE: Wm. E. Muno 7/11/94
DIRECTOR, WASTE MANAGEMENT DIVISION

DISAPPROVE: _____
DIRECTOR, WASTE MANAGEMENT DIVISION

Attachments: Enforcement Confidential Addendum
1. IDNS Letter Dated August 27, 1993
2. Index to the Administrative Record

cc: Terri Johnson, OS-210
Don Henne, U.S. Department of the Interior
Office of Environmnental Policy and Compliance
U.S. Custom House, Room 217
200 Chestnut Street
Philadelphia, PA 19106
Gary King, IEPA Superfund Coordinator

bcc: A. Baumann, HSRL-5J
R. Powers/R. Buckley, HSE-GI
R. Bowden. HSE-5J
J. Cisneros, HSE-5J
L. Fabinski, ATSDR, HSRL-5J
O. Warnsley, CRU, HSRLT-5J
T. Lesser, P-19J
F. Myers, MF-10J
EERB Read File (M. Johnson)
EERB Site File (SF Central File Room)
V. Simon, On-Scene Coordinator
M. Radell, ORC
D. Regel, HSE-5J
L. Glatstein, AT-18J
L.Jensen, AT-18J

ENFORCEMENT ADDENDUM

Redacted - not relevant to the selection of the removal action.

ATTACHMENT 1

STATE OF ILLINOIS
DEPARTMENT OF NUCLEAR SAFETY
1035 OUTER PARK DRIVE
SPRINGFIELD, ILLINOIS 62704
217/785-9900
217/782-6133 (TDD)

Jim Edgar
Governor

Thomas W. Ortciger
Director

August 27, 1993

Mr. Rick Karl, Acting Chief
Emergency and Enforcement Response Branch
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Karl:

This is in response to your June 21, 1993, request for assistance regarding classification of radioactive contamination at two locations in Chicago and one West Chicago location. We have reviewed all available information concerning these locations and make the following recommendations:

1. 316 East Illinois St., Chicago - Radioactive material at this location should be classified as "source" material. This location was apparently a warehouse facility used in conjunction with the Lindsay Light Chicago gas mantle manufacturing operation.

2. 161 East Grand, Chicago - Radioactive material at this location should be classified as "source" material. This location apparently housed the corporate offices for Lindsay Light and was the manufacturing operation for the gas mantles. However, there is no substantive information that indicates that thorium was actually extracted from ore at this location. Lindsay Light produced thorium nitrate and used it for the gas mantle manufacturing operation, and, in fact, exported thorium nitrate during the period in question. The exact location where the thorium nitrate was produced is unknown. Therefore, the contamination associated with this property must be assumed to be associated with the manufacturing of gas mantles and should be classified as "source" material.

3. 185 West Washington, West Chicago - Our information indicates that this location was used as a laboratory facility in support of Kerr-McGee activities at their West Chicago site. Since all of the contamination associated with the Kerr-McGee West Chicago operations have been determined to be "Byproduct material", the contamination at this location should be classified as "Byproduct Material" as defined in 32 Ill. Adm. Code 332.20.

Please note that the above is based on a careful review of very limited information. If we obtain additional information that alters the above recommendations, we will inform you promptly. We hope this information is helpful and if we can be of additional assistance please contact us.

Sincerely,

Joseph G. Klinger,
Head of Licensing
Division of Radioactive Materials

JGK:ren

ATTACHMENT 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
LINDSAY LIGHT II SITE,
CHICAGO, ILLINOIS

May 2, 1994

DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
06/21/93	Karl, R., U.S. EPA	Klinger, J., Ill. Dept. of Nuclear Safety	Letter to Ill. Dept. of Nuclear Safety (IDNS)	1
08/18/93	Kouris, T., Ecology & Environment, Inc.	Pfundheller, J., U.S. EPA	Letter re: Site Assessment	4
08/26/93	TMA Eberline	Ecology & Environment, Inc.	Thermoluminescent Dosimeter Badges Data	3
08/27/93	Klinger, J., Ill. Dept. of Nuclear Safety	Karl, R., U.S. EPA	Response to U.S. EPA Letter Dated 6/21/93	2
01/27/94	Muno, W., U.S. EPA	Chicago Dock & Canal Trust	Administrative Order by Consent	16
00/00/00	U.S. EPA	U.S. EPA	Action Memorandum (Pending)	